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ABSTRACT

This document reports on the procedures and results of the Atlanta Public Schools (APS) testing program in changing from the Iowa Tests of Basic Skills (ITBS), administered to grades 1 through 7 from 1973-79, to the California Achievement Tests (CAT), Form C, administered in Spring 1980 to provide a continuous testing program from the elementary through secondary grades. The ITBS, CAT, Metropolitan Achievement Tests (MAT), and SRA Achievement Series were reviewed and evaluated on 18 criteria, the foremost being compatibility with the APS curriculum. The CAT was selected. An equating study using the method of equi-percentile equating of scores was utilized to determine the relationship of scores between the 1971 edition of ITBS and the 1978 edition of CAT. It was found that correlations for the two tests were higher for the on-level cells, and that the correlations for Mathematics were higher than those for Reading Comprehension. In 1980 the CAT test battery and the ITBS Reading Comprehension subtest were administered. Score conversions produced equivalent results only for the second grade. The first grade CAT scores were equivalent to the national norm; other grades scored below the national norm. Reading Vocabulary scores were particularly low. The highest scores occurred in Spelling. (PN)

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ATLANTA PUBLIC SCHOOLS' 1980 ACHIEVEMENT TESTING PROGRAM: A YEAR OF TEST ADOPTION

RESEARCH, EVALUATION, AND DATA PROCESSING
ATLANTA PUBLIC SCHOOLS
ATLANTA, GEORGIA

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Report No.: 16-4, 2/82

ATLANTA PUBLIC SCHOOLS' 1980 ACHIEVEMENT TESTING PROGRAM: A YEAR OF TEST ADOPTION

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INTRODUCTION

The Atlanta Public Schools (APS) has maintained a data bank of student achievement scores since 1973. The Iowa Tests of Basic Skills (ITBS) was administered to all students enrolled in grades 1-7 from 1973-79. The school system adopted the California Achievement Tests (CAT), Form C for systemwide administration beginning in the Spring of 1980. The selection of the CAT was made by a Test Review Committee in response to the need for a recently normed test and the need to provide a continuous testing program from the elementary through the high school grades.

The purpose of this document is to report on the procedures and results of the testing program changes. In the first section of the report, the test review process will be described. The procedures and results of the equating study, which was undertaken to provide continuity between the ITBS and CAT testing programs, will be presented in the second section. The results of the initial year of CAT administration will be given in the third section. Included in that section will be a comparison of ITBS and CAT scores.

THE TEST REVIEW PROCESS

Testing Questionnaire

Prior to the formation of a Test Review Committee, questionnaires were constructed to collect information on the current needs for test data. Two questionnaires were developed: one for elementary and middle schools and one for high schools. The questionnaires were distributed in December 1978 to all professional staff of the Atlanta Public Schools, including local and area administrators, teachers, and principals.

The general findings are listed below:

1. The content coverage of the 1971 (Iowa Tests of Basic Skills) ITBS was considered to be relevant.
2. Practice tests were requested.

3. Grade-equivalent scores and class listings were reported to be the most useful reporting methods.
4. Test results were used primarily for grouping and placement, but also were used for instructional planning and evaluation.
5. Teachers wanted kindergarten students and high school students to be included in future testing programs.
6. Out-of-level testing was preferred, and teachers thought that they should make the decisions on test level assignment.
7. An achievement test selected for administration in the high schools should be part of the same test battery administered in elementary and middle schools.

Test Review Committee

A Test Review Committee was formed in January 1979 to review the revised ITBS as well as other recently standardized test batteries. The task of the committee was to recommend to the Superintendent's Cabinet a choice of a test battery as well as a proposed schedule of test administration. Thirty persons served on the committee which was made up of curriculum program development coordinators, resource teachers from each of the four administrative area offices, a community services coordinator, and research assistants.

Criteria for Test Review

The results of the testing questionnaire were presented to the committee at the first meeting. At that time, instructions also were given regarding the review of the test batteries on 18 criteria which were as follows:

1. Compatibility with APS Curriculum. Does the test sample basic skills taught in APS and does it reflect APS curriculum sequence?
2. Reasonable Cost. Is the cost reasonable?
3. Scoring Package. What is the availability, ease of use, quality, and flexibility of a scoring package to be used for local scoring?
4. K-8 Continuity. Are data available showing between-level reliability?

5. K-12 Continuity. How well does the high school extension of the test battery match the elementary portion?

6. Existing Data Bank. How consistent will the new test scores be with the existing data bank?

7. Out-of-Level Testing. Are norms available for students taking test levels below their grade placement?

8. Placement Tests. Are short, diagnostic/locator tests available to help in determining appropriate test levels?

9. Relationship to Criterion-Referenced Tests. What is the test's relationship to the diagnostic and criterion-referenced tests presently being used in APS (e.g., Georgia Criterion-Referenced Tests and Prescriptive Reading Inventory)?

10. Attractive Art Work and Format. Are the test materials attractive? Does the art work appeal to students, thus providing some degree of motivation?

11. Short Practice Tests. What provision is there for teaching test-taking skills related specifically to this test?

12. Ease of Administration. Do the examiners' manuals provide simple, easy-to-follow directions for the teachers?

13. Technical Excellence. Does the technical manual indicate excellence as shown by reliability, range coverage, and score gradation?

14. Minimum Test Bias. Has the issue of cultural fairness been addressed in the development of the test?

15. Reasonable Timing. Is the time required for test taking reasonable for the particular age group?

16. Specialized Norms. Are large city and regional norms available?

17. Equal Level Ratings. Are all levels of the battery equally sound and equally valid? Are there some levels in the battery which do not meet the standards of the rest of the levels?

18. Equal Subject Areas Coverage. Are all subject areas in the battery equally sound and equally valid? Are there some subjects which do not meet the standards of the rest of the test?

Each of the 18 criteria was placed on a decision grid on which each of the four test batteries under consideration was to be rated. The first criterion — compatibility with APS curriculum — was considered to be so important that a negative rating would disqualify that test from further consideration. Each of the other criteria was rated on a scale of one to five (five being the highest possible rating).

Tests Reviewed

Four test batteries were reviewed by the committee during the month of February 1979. The tests reviewed were as follows:

California Achievement Tests (CAT) — published by CTB/McGraw-Hill.

Iowa Tests of Basic Skills (ITBS) — published by the Houghton Mifflin Company.

Metropolitan Achievement Tests (MAT) — published by the Psychological Corporation.

SRA Achievement Series — published by the Science Research Associates, Inc.

Representatives from each of the four test companies made presentations to the committee. The designed format was a formal one-hour presentation followed by a discussion period. Each of the sessions lasted longer than two hours. Each test representative was given a copy of the 18 criteria and a copy of the decision grid in advance of the presentation.

Review by School Staffs

After the presentations made by the test representatives, the committee members were asked to meet with school staffs to present specimen sets of the tests and to discuss the issues and criteria for test selection. Thirty-nine separate sessions were held and included a total of 291 teachers, 22 principals, 16 parents, 5 central office administrators, 4 area office administrators, and 2 students. The reactions of the groups were recorded on a form prepared for that purpose.

Decision

The curriculum coordinators and area resource teachers made brief presentations to the committee at the final meeting. After the results of the school staff review were presented, the committee broke up into four subgroups where the decision grid was discussed. This subgroup process made it easier to reach a consensus on the rating of each test on each of the criteria. The tabulation of the ratings revealed that the greatest number of points was received by the CAT.

In addition to the selection of the CAT, the committee recommended that the administration of the test to kindergarten and high school students be phased in over a two-year period. The 1980 program would include students enrolled in grades 1-9. In 1981, the program would be extended to include all students in kindergarten through the eleventh grade.

THE EQUATING STUDY

In order to determine the relationship of scores between the 1971 edition of the Iowa Tests of Basic Skills (ITBS) and the 1978 edition of the California Achievement Tests (CAT), an equating study was undertaken. Technical assistance in the design and analysis of the equating study was provided by the technical staff of CTB/McGraw-Hill. Bascially, the method of equipercentile equating of scores was utilized.

Preliminary Considerations

As the equating study was designed, the following requisites were considered:

1. The equating study must assess the effects of out-of-level testing.
2. Tests should be administered to intact classrooms. This procedure minimizes the interruptions of instructional activities even though more students are tested than actually needed for the equating design.
3. The total time required for test administration should be minimized.

As a result of these needs, students tested for the equating study were assigned test levels according to the procedures for out-of-level testing followed during previous ITBS administrations. All students in the classrooms selected for the equating study were tested. The equating study was limited to the reading comprehension and mathematics subtests; thus, fewer than four hours of testing were required of any student.

Test Level Assignments

The Atlanta Public Schools has administered an out-of-level testing program since 1975. Test levels were assigned by sending computerized scan sheets to each classroom teacher. The sheets listed alphabetically all students enrolled in the class, their identification numbers, special education codes, the previous year's reading GE, and a recommended test level.

The original criteria for assigning test levels were provided by the technical staff of Houghton Mifflin. In 1977 the criteria were modified to be more consistent with the actual test level assignments made by the classroom teacher (i.e., to reduce the number of changes that were made). The criteria used for recommending test levels from 1977-79 and for the equating study are given in the following tabulation.

Previous Year's Reading Score	ITBS Recommended Test Level
0.1 - 1.1	Level 7
1.2 - 2.4	Level 8
2.5 - 3.3	Level 9
3.4 - 4.3	Level 10
4.4 - 5.2	Level 11
5.3 - 5.9	Level 12
6.0 - 6.8	Level 13
Above 6.8	Level 14

All first grade students were assigned Level 7. Pupils who did not have a test score on file for the previous year were recommended a test level which corresponded to their grade placement.

Teachers reviewed the scan sheets and made changes in test level assignments which they deemed appropriate on the basis of classroom performance and other test measures. The changes were made by coding in the appropriate information on the scan sheets. As the sheets were scanned, a test level assignment file was created.

For the equating study, ITBS levels were assigned by the procedure described above. Each student also was assigned the corresponding CAT levels.

Sample

According to the design for the equating study recommended by CTB/McGraw-Hill, each cell of the test level by grade matrix should contain matched scores from at least 500 students in order to build an equivalency table. From previous test administrations, it was possible to project the percent of students who would fall into each of the cells. The percentages are shown in Table 1.

TABLE 1

PERCENT OF STUDENTS BY GRADE TAKING EACH LEVEL OF THE IOWA TESTS OF BASIC SKILLS, 1979

	Grade							
Test Level	1	2	3	4	5	6	7	8
7	100	25	10	4	2			
8		75	40	15	12	9	1	
9			50	35	25	15	8	
10				46	25	20	15	9
11					36	25	20	15
12						31	25	20
13							31	25
14								31

No attempt was made to fill every cell; rather plans were made to collect sufficient data to build equivalency tables for the on-level cells for grades 1 and 2, the on-level and one out-of-level cell for grades 3 and 4, and the on-level and two out-of-level cells for grades 5-8.

Based on the projections, the sample used for the equating study included: one section of grade 1 in 21 randomly selected elementary schools; one section of each of the grades 2-7 in 95 elementary schools; all grade 8 students enrolled in the nine middle schools; and four homeroom sections of each high school.

Test Administration

The Total Reading components of the ITBS and CAT are comprised of different subtests. For that reason, the reading portion of the equating study was limited to the Reading Comprehension subtest. The Total Mathematics components of the two tests are similar. Therefore, both mathematics subtests were included in the equating study.

The tests were administered during the last two weeks in September and the first week of October 1979. In order to control for the effects of order of administration, schools were randomly assigned to two groups. One group was administered the ITBS followed by the CAT. The other group was administered the two tests in reverse order.

Data Analysis

Matched scores for students were included for analysis only when equivalent ITBS and CAT levels were administered. The pairs of matched scores were sorted into a grade by test level matrix. The number of matched scores for the reading comprehension and total mathematics subtests are presented in Table 2. Contrary to expectation, two of the eighth grade cells and one of the seventh grade cells contained fewer than 500 sets of paired scores. For this reason, equivalency tables were built for on-level tests, one level out-of-grade placement for grades 3 and 4, and two levels out-of-grade placement for grades 5-6.

Correlations Between ITBS and CAT

Pearson Product-Moment correlation coefficients were computed for each cell containing scores of more than 250 students. The obtained values are presented in Table 3 and Table 4. All of the correlations were statistically significant ($p < .01$). The Reading Comprehension correlation for the first grade on-level cell, while statistically significant, was considerably lower than the correlation coefficients obtained for all other cells.

TABLE 2

NUMBER OF CASES FOR EACH GRADE AND TEST LEVEL
FOR THE EQUATING STUDY

Test Level ITBS/CAT		Grade 1	2	3	4	5	6	7	8	Total
7/11	Reading	527	326	134	15	13	19	6	—	1,040
	Math	465	322	131	14	10	19	5	—	966
8/12	Reading	—	1,382*	801*	363	222	79	52	6	2,905
	Math	—	1,330	768	335	215	71	46	6	2,771
9/13	Reading	—	9	986*	583*	409*	360	249	87	2,683
	Math	—	8	956	574	387	353	243	81	2,602
10/14	Reading	—	5	9	748*	500*	519*	326	149	2,256
	Math	—	5	9	729	484	504	312	139	2,182
11/15	Reading	2	1	1	13	792*	615*	543*	412	2,379
	Math	2	1	1	11	780	594	506	382	2,277
12/16	Reading	—	1	—	1	9	984*	458	286	1,739
	Math	—	1	-	1	7	954	447	264	1,674
13/17	Reading	—	—	—	—	2	20	1,052*	302	1,376
	Math	—	—	—	—	2	18	1,016	294	1,330
14/18	Reading	—	—	—	—	—	1	18	743*	762
	Math	—	—	—	—	—	1	18	735	754
All Reading Levels	—	529	1,724	1,931	1,723	1,947	2,597	2,704	1,985	15,140
	Math	467	1,667	1,865	1,664	1,885	2,514	2,593	1,901	14,556

*Cells for which equivalency tables were built.

TABLE 3

COEFFICIENTS OF CORRELATION BETWEEN THE CALIFORNIA ACHIEVEMENT TESTS (CAT) AND THE IOWA TESTS OF BASIC SKILLS (ITBS)

READING COMPREHENSION

Level	Grade							
ITBS/CAT	1	2	3	4	5	6	7	8
7/11	.27	.29						
8/12	—	.68	.51	.59				
9/13	—	—	.64	.63	.59	.53		
10/14	—	—	—	.77	.62	.63	.57	
11/15	—	—	—	—	.78	.63	.56	.60
12/16	—	—	—	—	—	.80	.60	.58
13/17	—	—	—	—	—	—	.80	.59
14/18	—	—	—	—	—	—	—	.77

TABLE 4

COEFFICIENTS OF CORRELATION BETWEEN THE CALIFORNIA ACHIEVEMENT TESTS (CAT) AND THE IOWA TESTS OF BASIC SKILLS (ITBS)

MATHEMATICS

Level	Grade							
ITBS/CAT	1	2	3	4	5	6	7	8
7/11	.61	.70						
8/12	—	.69	.64	.59				
9/13	—	—	.78	.73	.77	.78		
10/14	—	—	—	.80	.68	.70	.72	
11/15	—	—	—	—	.80	.68	.71	.79
12/16	—	—	—	—	—	.79	.66	.74
13/17	—	—	—	—	—	—	.80	.70
14/18	—	—	—	—	—	—	—	.80

Within each of the Reading Comprehension and Mathematics test levels, the highest correlation occurred for each of the on-level cells with one exception (Mathematics grade 2). The Reading Comprehension and Mathematics correlations were equivalent for one cell (two levels out-of-grade placement for grade 4). In one instance, the Reading Comprehension correlation was greater than the Mathematics correlation (the grade 6, on-level cell). Except for these two cells, however, the Mathematics correlations were greater than the Reading Comprehension correlations.

Grade-Equivalent Scores

The mean grade-equivalent scores computed from the scores of each cell are given in Table 5 and Table 6. For each grade, on-level grade-equivalent scores were higher than the out-of-level scores for both Reading Comprehension and Mathematics.

For the on-level cells in Reading Comprehension, ITBS scores were slightly higher than CAT scores in grades 1 and 3. CAT scores were higher than ITBS scores for the remaining on-level cells. Generally, the extent to which CAT scores exceeded ITBS scores increased as a function of grade level. That is, in grade 4, CAT scores were approximately two months higher than ITBS scores; yet in grade 8, CAT scores were more than one year higher than ITBS scores.

In Mathematics, ITBS scores were higher than CAT scores for the on-level cells for grades 1-4. CAT scores exceeded ITBS scores for the on-level cells in grades 5-8. Similar to Reading Comprehension, the difference between CAT and ITBS scores increased as a function of grade level. ITBS scores exceeded CAT scores by almost three months in grade 1; by grade 4, ITBS scores were less than one month higher than CAT scores. At grade 5, where CAT scores became higher than ITBS scores, the difference between the scores on the two tests was less than one month; on the other hand, CAT scores were almost seven months higher than ITBS scores in grade 8.

The relationship between CAT and ITBS Reading Comprehension scores was not consistent for the on-level and out-of-level cells. In grades 2-5, the difference between CAT and ITBS in the out-of-level cells was the reverse of the on-level cells. For example, in grade 5, CAT scores were four months higher than ITBS scores for the on-level cells, but CAT scores were lower than ITBS scores in the out-of-level cells. While the direction of the relationship between

TABLE 5

MEAN READING COMPREHENSION GRADE-EQUIVALENT SCORES

Level	Grade 1	2	3	4	5	6	7	8
ITBS Level 7	1.14	1.41						
CAT Level 11	1.03	1.31						
(ITBS-CAT)	(+.11)	(+.10)						
ITBS Level 8	—	1.94	2.03	2.10				
CAT Level 12	—	2.02	2.04	2.10				
(ITBS-CAT)	—	(-.08)	(-.01)	(0)				
ITBS Level 9	—	—	3.17	3.06	3.01	3.13		
CAT Level 13	—	—	3.15	2.88	2.86	2.98		
(ITBS-CAT)	—	—	(+.02)	(+.18)	(+.15)	(+.15)		
ITBS Level 10	—	—	—	4.27	3.82	3.79	3.98	
CAT Level 14	—	—	—	4.49	3.79	3.64	3.95	
(ITBS-CAT)	—	—	—	(-.22)	(+.03)	(+.15)	(+0.3)	
ITBS Level 11	—	—	—	—	5.17	4.69	4.71	4.56
CAT Level 15	—	—	—	—	5.59	4.74	4.73	4.57
(ITBS-CAT)	—	—	—	—	(-.42)	(-.05)	(-.02)	(-.01)
ITBS Level 12	—	—	—	—	—	5.85	5.32	5.17
CAT Level 16	—	—	—	—	—	6.68	5.89	5.80
(ITBS CAT)	—	—	—	—	—	(-.83)	(-.57)	(-.62)
ITBS Level 13	—	—	—	—	—	—	6.59	6.10
CAT Level 17	—	—	—	—	—	—	7.36	6.47
(ITBS-CAT)	—	—	—	—	—	—	(-.77)	(-.37)
ITBS Level 14	—	—	—	—	—	—	—	7.21
CAT Level 18	—	—	—	—	—	—	—	8.34
(ITBS-CAT)	—	—	—	—	—	—	—	(-1.13)
All Levels								
ITBS	1.14	1.84	2.58	3.38	4.02	4.67	5.31	5.78
CAT	1.03	1.88	2.56	3.41	4.15	4.96	5.69	6.37
(ITBS-CAT)	(+.11)	(-.04)	(+.02)	(-.03)	(-.13)	(-.29)	(-.38)	(-.59)

TABLE 6

MEAN MATHEMATICS GRADE EQUIVALENT SCORES

Level	Grade 1	2	3	4	5	6	7	8
ITBS Level 7	1.17	1.57						
CAT Level 11	.88	1.31						
(ITBS-CAT)	(+.29)	(+.26)						
ITBS Level 8	—	2.13	2.34	2.52				
CAT Level 12	—	1.90	2.19	2.56				
(ITBS-CAT)	—	(+.22)	(+.15)	(-.04)				
ITBS Level 9	—	—	3.02	3.07	3.27	3.43		
CAT Level 13	—	—	2.85	3.14	3.45	3.67		
(ITBS-CAT)	—	—	(+.17)	(-.07)	(-.18)	(-.24)		
ITBS Level 10	—	—	—	4.12	3.99	4.05	4.26	
CAT Level 14	—	—	—	4.08	4.06	4.26	4.66	
(ITBS-CAT)	—	—	—	(+.04)	(-.07)	(-.21)	(-.40)	
ITBS Level 11	—	—	—	—	5.04	4.79	5.00	5.13
CAT Level 15	—	—	—	—	5.12	4.90	5.28	5.46
(ITBS-CAT)	—	—	—	—	(+.08)	(+.11)	(+.28)	(-.33)
ITBS Level 12	—	—	—	—	—	5.77	5.53	5.76
CAT Level 16	—	—	—	—	—	5.94	5.96	6.27
(ITBS-CAT)	—	—	—	—	—	(-.17)	(-.43)	(-.51)
ITBS Level 13	—	—	—	—	—	—	6.48	6.41
CAT Level 17	—	—	—	—	—	—	6.76	6.72
(ITBS-CAT)	—	—	—	—	—	—	(-.28)	(-.31)
ITBS Level 14	—	—	—	—	—	—	—	7.29
CAT Level 18	—	—	—	—	—	—	—	7.95
(ITBS-CAT)	—	—	—	—	—	—	—	(-.66)
All Levels								
ITBS	1.17	2.02	2.65	3.42	4.14	4.77	5.42	6.14
CAT	.88	1.79	2.50	3.43	4.23	4.93	5.73	6.61
(ITBS-CAT)	(+.29)	(+.23)	(+.15)	(-.01)	(-.09)	(-.16)	(-.31)	(-.47)

the two tests was essentially the same for grades 7 and 8, the magnitude of the difference varied for the on-level and off-level cells.

In Mathematics, the relationship between the two tests was more consistent than it was for Reading Comprehension. In all grades, except grade 4, the direction of the difference between the two tests was the same for the on-level and the out-of-level cells. Even though the direction of the difference across cells at grade 4 varied, the absolute difference between scores on the two tests was small. Although the magnitude of the differences between the two tests varied for the on-level and out-of-level cells, the differences were small compared to Reading Comprehension.

The mean grade-equivalent scores computed across all test levels within each grade are reported in the row labeled "All Levels." In Reading Comprehension, the difference in CAT and ITBS mean grade-equivalent scores across test levels for grades 1-3 was approximately the same as the difference in mean grade-equivalent scores reported in the on-level cells for those grades. In grades 4-8, however, the difference in mean grade-equivalent scores across all test levels was considerably lower than the difference for the on-level cells. In Mathematics the differences were not so great. The differences in mean grade-equivalent scores across test levels in grades 1-7 were approximately the same as the differences for the on-level cells, whereas the difference across test levels for grade 8 was lower than the difference for the on-level score reported for that grade.

Score Conversions

The score conversions adopted for assessing the gains from the 1979 to the 1980 testing program were as follows:

TO CONVERT ITBS TO CAT

Grade	Reading Comprehension	Mathematics
1	Subtract one month	Subtract three months
2	No change	Subtract two months
3	No change	Subtract two months
4	No change	No change
5	Add one month	Add one month
6	Add three months	Add two months
7	Add four months	Add three months
8	Add six months	Add five months

The conversions were made according to the mean grade-equivalent scores calculated across test levels reported in Tables 5 and 6. These values were adopted since they reflect the test administration practices of the Atlanta Public Schools. The score conversions, of course, would be inappropriate for school systems implementing an on-level testing program or a dissimilar out-of-level testing program.

Equipercentile Equating

For the equipercentile equating, ITBS and CAT grade-equivalent scores were treated separately. Within each cell, ITBS grade-equivalent scores were arranged by rank order so that the corresponding percentile ranks could be computed. Percentile ranks were rounded to the nearest whole number. When more than one grade-equivalent score tied for a given percentile rank, the mean of the tied grade-equivalent scores was assigned. The result was a table for each cell of corresponding grade-equivalent scores and percentile ranks. The same procedure was followed for CAT scores.

According to the method of equipercentile equating, tables of equivalency could be built around the percentile ranks. That is, pairs of scores from each test were considered to be equivalent if their corresponding percentile ranks were equal. For example, if within one of the cells an ITBS grade-equivalent score of 5.1 fell at the fiftieth percentile rank, and a CAT grade-equivalent score of 5.0 also fell at the fiftieth percentile rank, then the ITBS score of 5.1 was assumed to be equivalent to the CAT score of 5.0 within that cell.

Equivalency tables for the on-level cells as well as for the out-of-level cells that contained more than 500 matched scores are provided in the Appendix. Only obtained values are reported.

The differences between CAT and ITBS grade-equivalent scores at the tenth, fiftieth, and ninetieth percentile ranks of the on-level cells are presented in Tables 7 and 8. The values were calculated by subtracting the ITBS grade-equivalent scores from the CAT grade-equivalent scores.

From Table 7, it can be seen that CAT and ITBS Reading Comprehension scores at the fiftieth percentile rank differed by one month or less for grades 1-5. For grades 6, 7, and 8, however, CAT scores exceeded ITBS scores by as much as 6 months to one year. At the tenth percentile rank, CAT scores were lower than ITBS scores for all grades except grade 2. The reverse trend was

apparent at the ninetieth percentile rank. Except for grade 1, CAT scores were higher than ITBS scores. The difference ranged from two months to more than three years. Thus, CAT scores exceeded ITBS scores for very high scores, while ITBS scores exceeded CAT scores for very low scores. Furthermore, the extent to which CAT scores exceeded ITBS scores at the ninetieth percentile rank was far greater than the extent to which ITBS scores exceeded CAT scores at the tenth percentile rank. For example, at grades 4, 5, and 8 the difference between the scores on the two tests at the ninetieth percentile rank were ten times greater than the differences at the tenth percentile rank.

The differences between the scores on the two tests were not as great in Mathematics (Table 8) as they were in Reading Comprehension, but the trend was similar. At the fiftieth percentile rank, scores differed by one month or less for grades 1, 3, 4, and 5. In grade 2, ITBS scores exceeded CAT scores by three months; for grades 6-8, CAT scores exceeded ITBS scores by two to seven months. At the tenth percentile rank, ITBS scores were higher than CAT scores for all grades except grades 4 and 8. The differences ranged from one to five months. Similar to Reading Comprehension, the reverse trend was apparent at the ninetieth percentile rank. Except for grades 1-3, CAT scores were higher than ITBS scores. The differences ranged from one month to one year-four months. For grades 5-8, the differences between the scores on the two tests were greater at the ninetieth percentile rank than at the tenth percentile rank or the fiftieth percentile rank. The extent of the differences, however, was not as great as it was for Reading Comprehension.

TABLE 7

DIFFERENCE BETWEEN CAT AND ITBS READING SCORES
AT THREE PERCENTILE RANKS
(CAT MINUS ITBS)

Grade	Tenth Percentile	Fiftieth Percentile	Ninetieth Percentile
1	-0.2	0.0	-0.1
2	+0.3	0.0	+0.2
3	-0.4	0.0	+0.7
4	-0.1	-0.1	+1.1
5	-0.2	+0.1	+2.2
6	-0.1	+0.6	+2.6
7	-0.5	+0.9	+2.6
8	-0.3	+1.0	+3.1

TABLE 8

DIFFERENCE BETWEEN CAT AND ITBS MATHEMATICS SCORES
AT THREE PERCENTILE RANKS
(CAT MINUS ITBS)

Grade	Tenth Percentile	Fiftieth Percentile	Ninetieth Percentile
1	-0.5	-0.1	-0.2
2	-0.2	-0.3	0.0
3	-0.3	0.0	-0.2
4	+0.1	-0.1	+0.1
5	-0.1	+0.1	+0.3
6	-0.1	+0.2	+0.6
7	-0.2	+0.3	+0.7
8	+0.2	+0.7	+1.4

1980 TEST RESULTS

The entire California Achievement Tests (CAT) test battery was administered to students enrolled in grades 1-9 in April 1980. In addition, the Reading Comprehension subtest of the Iowa Tests of Basic Skills (ITBS) was administered to students enrolled in grades 1-8.

Test Level Assignments

The ITBS and CAT were administered according to the out-of-level testing procedures described earlier in this report. The percent of students in each grade that took each test level is reported in Table 9.

In comparison to the 1979 ITBS administration (Table 1), there was an increase in the percent of students taking on-level tests at every grade except grade 8. Compared to the test level assignments from the equating study (Table 2), the 1980 spring testing program resulted in more on-level testing at grades 2, 3, and 4. There was more out-of-level testing at grade 8, while test level assignments remained essentially unchanged for grades 5, 6, and 7.

TABLE 9

PERCENT OF STUDENTS BY GRADE TAKING EACH LEVEL
OF THE CALIFORNIA ACHIEVEMENT TESTS
SPRING 1980

Test Level	1	2	3	4	5	6	7	8
11	99	15	6	2	1			
12		83	33	19	11	5	3	1
13		1	60	28	21	14	8	5
14			1	50	24	20	15	14
15				2	42	23	20	17
16					1	38	16	15
17							38	16
18								32

ITBS Results

The ITBS scores from the 1979 and 1980 spring testing programs are reported in Table 10. It can be seen that scores for grades 1-3 remained

stable for the two reporting periods, while scores increased for grades 4-8. The greatest gains occurred at grades 4 and 7, each of which improved by three months.

TABLE 10

ITBS READING COMPREHENSION SCORES

Grade	ITBS 1979	ITBS 1980	Gain
1	2.2	2.2	0.0
2	2.6	2.6	0.0
3	3.3	3.3	0.0
4	3.8	4.1	+0.3
5	4.6	4.7	+0.1
6	5.0	5.2	+0.2
7	5.5	5.8	+0.3
8	5.8	5.9	+0.1

Comparison of CAT and ITBS

Reading Comprehension and Mathematics scores from the 1979 ITBS testing program and the 1980 CAT testing program are shown in Table 11. The score conversions discussed in the previous section were applied to the actual 1979 ITBS score to produce the converted 1979 ITBS score. The estimated gain was calculated as the difference between the actual 1980 CAT scores and the converted 1979 ITBS scores.

TABLE 11

READING COMPREHENSION

Grade	Actual 1979 ITBS	Converted 1979 ITBS	Actual 1980 CAT	Estimated Gain*
1	2.2	2.1	1.9	-0.2
2	2.6	2.6	2.6	0.0
3	3.3	3.3	3.2	-0.1
4	3.8	3.8	4.3	+0.5
5	4.6	4.7	5.1	+0.4
6	5.0	5.3	5.8	+0.5
7	5.5	5.9	6.5	+0.6
8	5.8	6.4	6.9	+0.5

MATHEMATICS

Grade	Actual 1979 ITBS	Converted 1979 ITBS	Actual 1980 CAT	Estimated Gain*
1	1.9	1.6	1.8	+0.2
2	2.7	2.5	2.6	+0.1
3	3.3	3.1	3.4	+0.3
4	3.9	3.9	4.3	+0.4
5	4.6	4.7	5.1	+0.4
6	5.1	5.3	5.8	+0.5
7	5.7	6.0	6.6	+0.6
8	6.1	6.6	7.1	+0.5

*Actual 1980 CAT — Converted 1979 ITBS.

According to the estimated gain, Reading Comprehension scores increased from four to six months for grades 4-8. In contrast, scores declined by two months for grade 1 and one month for grade 3. These gains seem inconsistent with the gains reported in Table 10. The discrepancy might be related to the greater emphasis placed on the CAT administration.

There were positive gains in Mathematics at every grade level. Consistent with the Reading Comprehension results, gains were higher in grades 4-8, with the greatest gain at grade 7.

Additional CAT Results

The results of the complete CAT battery are presented in Table 12. The abbreviated subtest headings are described below:

PHON ANAL - Phonic Analysis

STR ANAL - Structural Analysis

READ VOC - Reading Vocabulary

READ COMP - Reading Comprehension

TOT READ - Total Reading

SPEL - Spelling

LANG MECH - Language Mechanics

LANG EXP - Language Expression

TOT LANG - Total Language

MATH COMP - Mathematics Computations

MATH C/A - Mathematics Concepts and Applications

TOT MATH - Total Mathematics

TOT BATT - Total Battery

REF SKIL - Reference Skills

The scores reported in Table 12 are scale scores (SS), normal-curve equivalents (NCE), grade equivalents (GE), and national percentiles (NP). The mean is reported as the measure of central tendency for the scale score and the normal-curve equivalent. Since the grade equivalent and percentile scales do not possess equal intervals, the median is reported for those two measures. (Note: Mean grade-equivalent scores had been reported from 1973-79. In order to provide comparable statistics, mean grade-equivalent scores also were reported in the earlier sections of this report.)

For the Total Battery, first grade scores were equivalent to the national norm. Scores for the other grades, however, fell below the national norm. The second grade scored seven NCE units below the national norm, whereas NCEs for grades 3-7 ranged from 10-12 units below the national norm. In grades 8 and 9, NCE's were 18 and 19 units below the national norm.

Reading Vocabulary scores were lower than Reading Comprehension scores at every grade. In fact, the discrepancy between the vocabulary and comprehension scores was great enough to result in the Reading Comprehension score exceeding the Total Reading score at every grade.

Total Mathematics scores were higher than Total Reading scores in all grades except 5 and 9. The highest scores occurred on the Spelling subtest, and the lowest scores occurred on Reading Vocabulary, Language Expression, and Mathematics Concepts and Applications.

TABLE 12

ATLANTA PUBLIC SCHOOLS
CALIFORNIA ACHIEVEMENT TESTS (CAT)
SPRING 1980

System Summary by Grade Level

Grade		Phon. Anal.	Str. Anal.	Read. Voc.	Read. Comp.	Tot. Read.	Spel.	Lang. Mech.	Lang. Exp.	Tot. Lang.	Math Comp.	Math C/A	Tot. Math	Tot. Batt.	Ref. Skil.
1	N	4,917	28	4,919	4,919	4,919	30	30	4,919	30	4,919	4,919	4,919	4,919	2
	Mean SS	309	374	324	335	300	449	459	348	438	276	329	316	307	487
	Mean NCE	45	73	50	54	49	82	81	48	83	55	51	53	50	
	Median GE			1.7	1.9	1.7	3.6	3.5	1.7	3.5	1.8	1.8	1.8	1.7	5.4
	Median NP	40	88	51	62	51	95	95	50	95	60	56	60	54	
2	N	4,098	3,471	4,101	4,101	4,101	3,474	3,474	4,101	3,474	4,101	4,101	4,101	4,101	3
	Mean SS	348	369	360	371	342	403	427	387	390	319	359	346	342	486
	Mean NCE	42	52	44	45	43	50	51	41	47	49	44	46	43	
	Median GE			2.4	2.4	2.3	3.0	2.7	2.3	2.5	2.9	2.4	2.6	2.4	4.5
	Median NP	38	59	39	41	37	58	49	36	40	51	38	44	36	
3	N	5,148	4,844	5,182	5,182	5,182	4,878	4,878	5,182	4,878	5,182	5,182	5,182	5,182	34
	Mean SS	370	390	380	396	369	437	453	419	421	357	388	376	373	505
	Mean NCE	40	47	39	42	39	47	46	39	42	41	41	41	39	73
	Median GE			2.7	3.0	2.9	3.5	3.6	2.8	3.2	3.5	3.1	3.3	3.1	6.0
	Median NP	28	53	32	36	29	43	46	29	36	32	33	29	26	85
4	N	2,446	2,366	5,058	5,058	5,058	4,978	4,978	5,058	4,978	5,058	5,058	5,058	5,058	2,612
	Mean SS	361	385	415	433	408	475	483	455	456	397	418	408	409	477
	Mean NCE			39	42	39	48	45	41	42	41	41	40	39	53
	Median GE			3.9	3.9	3.8	4.4	4.4	3.8	3.9	4.0	3.9	4.0	3.9	4.9
	Median NP			31	34	29	45	42	31	36	33	33	30	29	52

TABLE 12 (Continued)

System Summary by Grade Level

Grade		Phon. Anal.	Str. Anal.	Read. Voc.	Read. Comp.	Tot. Read.	Spel.	Lang. Mech.	Lang. Exp.	Tot. Lang.	Math Comp.	Math C/A	Tot. Math	Tot. Batt.	Ref. Skil.
5	N	1,519	1,491	4,722	4,722	4,722	4,694	4,694	4,722	4,694	4,722	4,722	4,722	4,722	3,203
	Mean SS	362	390	441	458	437	500	503	475	478	435	442	438	437	492
	Mean NCE			40	42	40	48	45	41	42	42	40	40	40	50
	Median GE			4.6	4.7	4.6	5.2	5.0	4.4	4.6	5.0	4.6	4.8	4.7	5.4
	Median NP			30	34	30	44	41	33	35	34	30	28	29	44
6	N	865	848	4,634	4,634	4,634	4,617	4,617	4,634	4,617	4,634	4,634	4,634	4,634	3,769
	Mean SS	359	385	459	475	457	515	512	487	489	461	461	460	455	501
	Mean NCE			38	40	38	46	44	41	41	41	39	39	38	46
	Median GE			5.1	5.3	5.2	5.9	5.5	4.8	5.1	5.9	5.3	5.6	5.4	6.1
	Median NP			30	30	30	43	40	34	33	36	27	29	28	43
7	N	512	500	4,697	4,697	4,697	4,685	4,685	4,697	4,685	4,697	4,697	4,697	4,697	4,185
	Mean SS	352	383	477	497	479	532	526	502	505	490	483	484	477	514
	Mean NCE			38	41	38	47	44	41	41	42	40	40	38	46
	Median GE			5.7	6.1	5.9	7.1	6.0	5.6	5.8	6.7	6.1	6.4	6.1	6.6
	Median NP			30	32	28	47	40	33	33	36	29	30	28	40
8	N	311	304	4,761	4,761	4,761	4,754	4,754	4,761	4,754	4,761	4,761	4,761	4,761	4,450
	Mean SS	336	359	482	502	483	531	522	503	502	498	487	488	472	508
	Mean NCE			33	36	33	42	39	36	36	35	34	34	32	38
	Median GE			6.0	6.4	6.3	7.1	5.8	6.0	6.0	7.3	6.6	6.8	6.4	7.0
	Median NP			23	25	21	36	27	24	24	27	22	23	19	30
9	N	311	307	4,935	4,935	4,935	4,931	4,931	4,935	4,931	4,935	4,935	4,935	4,935	4,624
	Mean SS	344	370	494	513	496	544	527	514	511	508	497	498	484	518
	Mean NCE			32	35	33	42	37	35	35	33	33	32	31	38
	Median GE			6.4	6.9	6.7	8.5	6.3	6.5	6.4	7.5	6.9	7.3	6.7	7.3
	Median NP			21	25	21	39	27	23	23	23	19	19	17	30

SUMMARY

This report described the activities undertaken in the Atlanta Public Schools from December 1978 to April 1980 in order to select a norm-referced achievement test for systemwide administration, to prepare for the transition in the testing programs, and to implement the first-year program.

A test review committee was formed early in 1979 to review four achievement test batteries. The tests were reviewed on 18 criteria. In addition to the committee's review, the tests were reviewed by school faculties. The selection made by both groups was for the California Achievement Tests (CAT).

An equating study was conducted in the fall of 1979 to provide a method for relating the scores collected from the 1973-1979 administration of the Iowa Tests of Basic Skills (ITBS) to the CAT which was to be administered in the spring of 1980. It was found that the correlations for the two tests were higher for the on-level cells than for the out-of-level cells, and that the correlations for Mathematics were higher than the correlations for Reading Comprehension. The correlation for first grade Reading Comprehension was unusually low.

Not surprisingly, the grade-equivalent scores for the on-level cells were higher than for the out-of-level cells. Within the on-level cells, ITBS scores were higher than CAT scores for grades 1-3 in Reading Comprehension and for grades 1-4 in Mathematics. On the other hand, CAT scores were higher than ITBS scores for the remaining grades. The differences in scores between the two tests were greater for the higher grades and for the higher scoring students.

The 1980 achievement testing program consisted of the administration of the total test battery of CAT and the Reading Comprehension subtest of ITBS. The ITBS results indicated that reading scores remained stable from 1979 to 1980 in grades 1-3 and increased in grades 4-8. The application of the score conversions determined from the equating study produced equivalent results only for the second grade. The discrepancies at the other grades were three months or less.

The 1980 CAT results indicated that the first grade scores were equivalent to the national norm, whereas the other grades scored below the national norm. Reading Vocabulary scores were particularly low. The highest scores occurred in Spelling.

APPENDIX

EQUATING TABLE 1

ITBS LEVEL 7 TO CAT LEVEL 11
READING COMPREHENSION

GRADE 1

ITBS	CAT	ITBS	CAT
0.1	0.1	2.0	1.9
0.2	0.1	2.1	2.0
0.3	0.2	2.2	2.0
0.4	0.2	2.3	2.1
0.5	0.3	2.4	2.2
0.6	0.4	2.5	2.5
0.7	0.6	2.6	2.8
0.8	0.8	2.7	2.9
0.9	0.9	2.8	2.9
1.0	1.0	2.9	3.0
1.1	1.1	3.0	3.1
1.2	1.2	3.1	3.1
1.3	1.3	3.2	3.2
1.4	1.3		
1.5	1.5		
1.6	1.6		
1.7	1.6		
1.8	1.7		
1.9	1.7		

EQUATING TABLE 2

ITBS LEVEL 8 TO CAT LEVEL 12
READING COMPREHENSION

GRADE 2

ITBS	CAT	ITBS	CAT	ITBS	CAT
0.1	0.1	2.4	2.5	4.7	4.9
0.2	0.1	2.5	2.7	4.8	4.9
0.3	0.2	2.6	2.8	4.9	4.9
0.4	0.4	2.7	2.8	5.0	4.9
0.5	0.6	2.8	2.9	5.1	4.9
0.6	0.9	2.9	3.0	5.2	4.9
0.7	1.0	3.0	3.2	5.3	4.9
0.8	1.0	3.1	3.3	5.4	4.9
0.9	1.2	3.2	3.4		
1.0	1.3	3.3	3.5		
1.1	1.4	3.4	3.6		
1.2	1.4	3.5	3.6		
1.3	1.5	3.6	3.8		
1.4	1.6	3.7	3.9		
1.5	1.7	3.8	4.0		
1.6	1.7	3.9	4.0		
1.7	1.7	4.0	4.1		
1.8	1.8	4.1	4.3		
1.9	1.9	4.2	4.5		
2.0	2.1	4.3	4.6		
2.1	2.2	4.4	4.7		
2.2	2.3	4.5	4.7		
2.3	2.4	4.6	4.8		

EQUATING TABLE 3

ITBS LEVEL 9 TO CAT LEVEL 13
READING COMPREHENSION

GRADES 3, 4, AND 5

ITBS	CAT Gr. 3	CAT Gr. 4	CAT Gr. 5	ITBS	CAT Gr. 3	CAT Gr. 4	CAT Gr. 5	ITBS	CAT Gr. 3	CAT Gr. 4	CAT Gr. 5
1.1	0.6	1.0		3.4	3.4	3.2	3.2	5.7	6.7	6.5	6.7
1.2	0.8	1.1		3.5	3.5	3.4	3.4	5.8	6.7	6.6	
1.3	1.0	1.2	1.5	3.6	3.6	3.5	3.5	5.9	6.7	6.6	
1.4	1.2	1.3	1.5	3.7	3.7	3.6	3.6	6.0	6.7	6.7	
1.5	1.3	1.3	1.5	3.8	3.8	3.6	3.7	6.1	6.7		
1.6	1.4	1.4	1.6	3.9	3.9	3.7	3.8	6.2	6.7		
1.7	1.4	1.4	1.6	4.0	4.4	3.8	3.9	6.3	6.7		
1.8	1.5	1.5	1.7	4.1	4.6	3.9	4.1	6.4	6.7		
1.9	1.6	1.7	1.8	4.2	4.7	4.0	4.2	6.5	6.7		
2.0	1.6	1.8	1.8	4.3	4.9	4.1	4.3	6.6	6.7		
2.1	1.7	1.8	1.9	4.4	5.1	4.4	4.5	6.7	6.7		
2.2	1.8	1.9	2.0	4.5	5.2	4.5	4.7	6.8	6.7		
2.3	1.9	2.0	2.1	4.6	5.4	4.8	4.8	6.9	6.7		
2.4	2.0	2.1	2.2	4.7	5.6	5.2	5.0	7.0	6.7		
2.5	2.3	2.3	2.3	4.8	6.2	5.6	5.4	7.1	6.7		
2.6	2.4	2.4	2.4	4.9	6.3	5.7	5.4	7.2	6.7		
2.7	2.5	2.5	2.5	5.0	6.3	5.8	5.5	7.3	6.7		
2.8	2.7	2.7	2.7	5.1	6.4	5.9	5.6	7.4	6.7		
2.9	2.8	2.7	2.7	5.2	6.7	6.0	5.8	7.5	6.7		
3.0	3.0	2.8	2.8	5.3	6.7	6.1	6.0				
3.1	3.1	2.8	2.8	5.4	6.7	6.2	6.2				
3.2	3.2	2.9	2.9	5.5	6.7	6.3	6.4				
3.3	3.3	3.1	3.0	5.6	6.7	6.4	6.6				

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EQUATING TABLE 4

ITBS LEVEL 10 TO CAT LEVEL 14
READING COMPREHENSION

GRADES 4, 5, AND 6

ITBS	CAT Gr. 4	CAT Gr. 5	CAT Gr. 6	ITBS	CAT Gr. 4	CAT Gr. 5	CAT Gr. 6	ITBS	CAT Gr. 4	CAT Gr. 5	CAT Gr. 6
1.6	1.4		1.3	3.7	3.7	3.5	3.5	5.8	6.7	6.9	6.4
1.7	1.5	1.3	1.4	3.8	3.7	3.6	3.6	5.9	6.8	7.3	6.6
1.8	1.6	1.3	1.4	3.9	3.7	3.7	3.7	6.0	6.9	7.8	6.7
1.9	1.6	1.5	1.4	4.0	3.8	3.8	3.8	6.1	7.2	8.2	6.9
2.0	1.7	1.7	1.5	4.1	3.9	3.9	3.9	6.2	7.8	8.7	7.2
2.1	1.9	1.8	1.5	4.2	4.1	4.0	4.0	6.3	7.9	9.2	7.4
2.2	2.0	1.9	1.6	4.3	4.2	4.2	4.1	6.4	8.0		7.7
2.3	2.0	2.0	1.7	4.4	4.3	4.3	4.2	6.5	8.4		
2.4	2.2	2.1	2.0	4.5	4.6	4.5	4.5	6.6	8.6		
2.5	2.3	2.3	2.1	4.6	4.7	4.6	4.6	6.7	9.0		
2.6	2.4	2.4	2.2	4.7	4.8	4.8	4.7	6.8	9.3		
2.7	2.6	2.5	2.4	4.8	5.1	5.1	4.8	6.9	9.6		
2.8	2.7	2.6	2.6	4.9	5.2	5.2	4.9	7.0	10.0		
2.9	2.8	2.7	2.7	5.0	5.3	5.1	5.0	7.1	10.2		
3.0	2.9	2.7	2.8	5.1	5.6	5.6	5.2	7.2	10.4		
3.1	3.0	2.8	2.9	5.2	5.7	5.7	5.4	7.3	10.6		
3.2	3.1	2.9	3.0	5.3	5.8	5.9	5.5	7.4	10.7		
3.3	3.2	3.1	3.1	5.4	6.2	6.2	5.6	7.5	10.8		
3.4	3.3	3.2	3.2	5.5	6.4	6.5	5.7	7.6	11.0		
3.5	3.4	3.3	3.3	5.6	6.5	6.6	6.0	7.7	11.2		
3.6	3.5	3.5	3.4	5.7	6.6	6.8	6.2	7.8	11.3		

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EQUATING TABLE 5

ITBS LEVEL 11 TO CAT LEVEL 15
READING COMPREHENSION

GRADES 5, 6, AND 7

ITBS	CAT Gr. 4	CAT Gr. 5	CAT Gr. 6	ITBS	CAT Gr. 4	CAT Gr. 5	CAT Gr. 6	ITBS	CAT Gr. 4	CAT Gr. 5	CAT Gr. 6
1.9	1.3			4.4	4.3	4.3	4.3	6.9	8.9	8.7	9.2
2.0	1.4			4.5	4.4	4.4	4.4	7.0	9.2	8.9	9.7
2.1	1.5	1.3	1.3	4.6	4.5	4.4	4.4	7.1	9.5	9.1	10.2
2.2	1.6	1.3	1.4	4.7	4.6	4.5	4.6	7.2	9.8	9.3	10.8
2.3	1.7	1.4	1.5	4.8	4.7	4.7	4.6	7.3	10.0	9.6	
2.4	1.8	1.4	1.5	4.9	4.8	4.9	4.7	7.4	10.1		
2.5	1.8	1.5	1.6	5.0	4.9	5.1	4.9	7.5	10.5		
2.6	1.9	1.6	1.9	5.1	5.0	5.2	5.1	7.6	10.8		
2.7	2.0	1.8	2.0	5.2	5.2	5.3	5.3	7.7	11.0		
2.8	2.2	1.9	2.1	5.3	5.4	5.5	5.4	7.8	11.2		
2.9	2.5	2.3	2.2	5.4	5.6	5.9	5.7	7.9	11.4		
3.0	2.6	2.4	2.3	5.5	5.8	6.1	6.0	8.0	11.6		
3.1	2.6	2.5	2.4	5.6	5.9	6.2	6.1	8.1	11.7		
3.2	2.9	3.0	2.6	5.7	6.0	6.3	6.2	8.2	11.8		
3.3	3.1	3.2	2.8	5.8	6.2	6.4	6.5	8.3	11.9		
3.4	3.2	3.3	3.0	5.9	6.6	6.5	6.6	8.4	12.1		
3.5	3.5	3.4	3.4	6.0	6.8	6.6	6.7	8.5	12.2		
3.6	3.6	3.5	3.5	6.1	7.0	6.8	6.8	8.6	12.2		
3.7	3.6	3.6	3.6	6.2	7.3	7.2	7.2	8.7	12.2		
3.8	3.7	3.6	3.7	6.3	7.5	7.5	7.5	8.8	12.2		
3.9	3.8	3.7	3.8	6.4	7.8	8.0	7.9	8.9	12.2		
4.0	3.8	3.8	3.9	6.5	7.9	8.1	8.0	9.0	12.2		
4.1	3.9	3.9	3.9	6.6	8.1	8.3	8.1	9.1	12.2		
4.2	4.0	4.0	4.0	6.7	8.3	8.4	8.2	9.2	12.2		
4.3	4.2	4.1	4.1	6.8	8.5	8.5	8.7				

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EQUATING TABLE 6

ITBS LEVEL 12 TO CAT LEVEL 16
READING COMPREHENSION

GRADE 6

ITBS	CAT Gr .6	ITBS	CAT Gr .6	ITBS	CAT Gr .6
2.3	2.0	5.1	5.4	8.0	10.8
2.4	2.0	5.2	5.5	8.1	10.9
2.5	2.1	5.3	5.6	8.2	11.0
2.6	2.2	5.4	5.7	8.3	11.2
2.7	2.2	5.5	5.8	8.4	11.3
2.8	2.3	5.6	5.9	8.5	11.4
2.9	2.4	5.7	6.2	8.6	11.5
3.0	2.5	5.8	6.3	8.7	12.1
3.1	2.6	5.9	6.4	8.8	12.7
3.2	3.0	6.0	6.6	8.9	12.8
3.3	3.2	6.1	6.8	9.0	12.8
3.4	3.4	6.2	7.1	9.1	12.9
3.5	3.5	6.3	7.4	9.2	12.9
3.6	3.6	6.4	7.6	9.3	12.9
3.7	3.6	6.5	7.8	9.4	12.9
3.8	3.7	6.6	7.9	9.5	12.9
3.9	3.8	6.7	8.0	9.6	12.9
4.0	3.9	6.9	8.2		
4.1	4.0	7.0	8.4		
4.2	4.1	7.1	8.5		
4.3	4.2	7.2	8.8		
4.4	4.4	7.3	8.9		
4.5	4.6	7.4	9.1		
4.6	4.7	7.5	10.0		
4.7	4.8	7.6	10.1		
4.8	4.9	7.7	10.3		
4.9	5.0	7.8	10.4		
5.0	5.1	7.9	10.7		

EQUATING TABLE 7

ITBS LEVEL 13 TO CAT LEVEL 17
READING COMPREHENSION

GRADE 7

ITBS	CAT	ITBS	CAT	ITBS	CAT
2.6	2.0	6.1	6.4	9.6	12.9
2.7	2.0	6.2	6.5	9.7	12.9
2.8	2.0	6.3	6.7	9.8	12.9
2.9	2.1	6.4	6.8	9.9	12.9
3.0	2.1	6.5	6.8	10.0	12.9
3.1	2.1	6.6	7.3	10.1	12.9
3.2	2.2	6.7	7.6	10.2	12.9
3.3	2.2	6.8	7.7	10.3	12.9
3.4	2.2	6.9	7.8	10.4	12.9
3.5	2.4	7.0	7.9	10.5	12.9
3.6	2.5	7.1	8.0	10.6	12.9
3.7	2.6	7.2	8.0	10.7	12.9
3.8	2.8	7.3	8.1	10.8	12.9
3.9	3.0	7.4	8.4	10.9	12.9
4.0	3.1	7.5	8.5	11.0	12.9
4.1	3.4	7.6	8.6	11.1	12.9
4.2	3.6	7.7	9.2		
4.3	3.8	7.8	9.3		
4.4	3.9	7.9	9.5		
4.5	4.0	8.0	9.8		
4.6	4.2	8.1	10.1		
4.7	4.4	8.2	10.2		
4.8	4.6	8.3	10.3		
4.9	4.8	8.4	10.4		
5.0	5.0	8.5	10.6		
5.1	5.2	8.6	10.7		
5.2	5.2	8.7	11.1		
5.3	5.3	8.8	11.3		
5.4	5.3	8.9	11.4		
5.5	5.6	9.0	11.6		
5.6	5.7	9.1	12.8		
5.7	5.9	9.2	12.8		
5.8	6.0	9.3	12.8		
5.9	6.2	9.4	12.9		
6.0	6.3	9.5	12.9		

EQUATING TABLE 8

ITBS LEVEL 14 TO CAT LEVEL 18
READING COMPREHENSION

GRADE 8

ITBS	CAT	ITBS	CAT	ITBS	CAT
3.3	2.0	6.8	7.9	10.3	12.9
3.4	2.1	6.9	8.0	10.4	12.9
3.5	2.2	7.0	8.0	10.5	12.9
3.6	2.3	7.1	8.1	10.6	12.9
3.7	3.0	7.2	8.2	10.7	12.9
3.8	3.1	7.3	8.2	10.8	12.9
3.9	3.2	7.4	8.3	10.9	12.9
4.0	3.3	7.5	8.5	11.0	12.9
4.1	3.4	7.6	8.7	11.1	12.9
4.2	3.7	7.7	9.0	11.2	12.9
4.3	4.1	7.8	9.2	11.3	12.9
4.4	4.2	7.9	9.4	11.4	12.9
4.5	4.2	8.0	9.6	11.5	12.9
4.6	4.3	8.1	9.8	11.6	12.9
4.7	4.4	8.2	9.8	11.7	12.9
4.8	4.6	8.3	9.9	11.8	12.9
4.9	5.0	8.4	10.0	11.9	12.9
5.0	5.1	8.5	10.2	12.0	12.9
5.1	5.2	8.6	10.5	12.1	12.9
5.2	5.4	8.7	10.7	12.2	12.9
5.3	5.6	8.8	10.8	12.3	12.9
5.4	5.8	8.9	11.0		
5.5	6.1	9.0	11.4		
5.6	6.2	9.1	11.5		
5.7	6.3	9.2	11.9		
5.8	6.4	9.3	12.2		
5.9	6.6	9.4	12.7		
6.0	6.7	9.5	12.9		
6.1	6.9	9.6	12.9		
6.2	7.2	9.7	12.9		
6.3	7.3	9.8	12.9		
6.4	7.4	9.9	12.9		
6.5	7.7	10.0	12.9		
6.6	7.8	10.1	12.9		
6.7	7.8	10.2	12.9		

EQUATING TABLE 9

ITBS LEVEL 7 TO CAT LEVEL 11
MATHEMATICS

GRADE 1

ITBS	CAT	ITBS	CAT
0.4	0.1	1.8	1.6
0.5	0.1	1.9	1.7
0.6	0.1	2.0	1.8
0.7	0.2	2.1	1.8
0.8	0.2	2.2	2.0
0.9	0.4	2.3	2.0
1.0	0.6	2.4	2.1
1.1	1.0	2.5	2.2
1.2	1.2	2.6	2.4
1.3	1.3		
1.4	1.3		
1.5	1.4		
1.6	1.5		
1.7	1.6		

EQUATING TABLE 10

ITBS LEVEL 8 TO CAT LEVEL 12
MATHEMATICS

GRADE 2

ITBS	CAT	ITBS	CAT
0.8	0.3	2.5	2.3
0.9	0.4	2.6	2.4
1.0	0.5	2.8	2.7
1.1	0.6	2.9	2.8
1.2	1.0	3.0	3.0
1.3	1.0	3.1	3.0
1.4	1.2	3.2	3.1
1.5	1.3	3.3	3.2
1.6	1.4	3.4	3.3
1.7	1.5	3.5	3.4
1.8	1.6	3.6	3.5
1.9	1.7	3.7	3.5
2.0	1.7	3.8	3.6
2.1	1.8	3.9	3.6
2.2	2.0	4.0	3.7
2.3	2.1	4.1	3.7
2.4	2.2		

EQUATING TABLE 11

ITBS LEVEL 9 TO CAT LEVEL 13
MATHEMATICS

GRADES 3, 4, AND 5

ITBS	CAT Gr. 3	CAT Gr. 4	CAT Gr. 5	ITBS	CAT Gr. 3	CAT Gr. 4	CAT Gr. 5	ITBS	CAT Gr. 3	CAT Gr. 4	CAT Gr. 5
1.4	0.9			2.9	2.9	3.1	3.2	4.4	4.2	4.4	4.6
1.5	1.0	1.2		3.0	3.0	3.2	3.3	4.5	4.3	4.5	4.6
1.6	1.2	1.3		3.1	3.1	3.3	3.4	4.6	4.4	4.6	4.7
1.7	1.3	1.4		3.2	3.2	3.4	3.4	4.7	4.4	4.6	4.8
1.8	1.4	1.5	1.6	3.3	3.3	3.4	3.5	4.8	4.5	4.7	5.1
1.9	1.6	1.6	1.7	3.4	3.4	3.5	3.6	4.9	4.6	5.0	5.2
2.0	1.7	1.8	1.8	3.5	3.4	3.6	3.6	5.0	4.7	5.1	5.2
2.1	1.8	2.1	2.1	3.6	3.5	3.6	3.7	5.1	4.8	5.3	5.3
2.2	1.9	2.2	2.2	3.7	3.5	3.7	3.8	5.2	4.8	5.4	5.4
2.3	2.0	2.3	2.3	3.8	3.6	3.7	3.9	5.3	5.0	5.5	
2.4	2.2	2.4	2.6	3.9	3.7	3.8	4.0	5.4	5.0		
2.5	2.3	2.5	2.9	4.0	3.8	3.9	4.2	5.5	5.1		
2.6	2.4	2.8	2.9	4.1	3.9	4.0	4.3	5.6	5.1		
2.7	2.5	2.9	3.0	4.2	4.0	4.2	4.3	5.7	5.2		
2.8	2.8	3.0	3.2	4.3	4.1	4.3	4.5				

EQUATING TABLE 12

ITBS LEVEL 10 TO CAT LEVEL 14
MATHEMATICS

GRADES 4, 5, AND 6

ITBS	CAT Gr. 4	CAT Gr. 5	CAT Gr. 6	ITBS	CAT Gr. 4	CAT Gr. 5	CAT Gr. 6	ITBS	CAT Gr. 4	CAT Gr. 5	CAT Gr. 6
2.2	1.7	1.7		3.9	3.8	4.0	4.0	5.6	5.6	5.9	6.5
2.3	1.9	1.8		4.0	3.9	4.1	4.1	5.7	5.6	6.3	6.6
2.4	2.1	1.9	1.6	4.1	4.0	4.2	4.2	5.8	5.9	6.7	6.7
2.5	2.2	2.0	1.8	4.2	4.1	4.3	4.3	5.9	6.0		7.0
2.6	2.2	2.1	2.0	4.3	4.2	4.4	4.4	6.0	6.1		7.3
2.7	2.4	2.2	2.2	4.4	4.3	4.5	4.5	6.1	6.4		7.5
2.8	2.5	2.5	2.4	4.5	4.4	4.6	4.6	6.2	6.4		
2.9	2.8	2.7	2.7	4.6	4.6	4.7	4.8	6.3	6.5		
3.0	3.0	2.8	2.9	4.7	4.6	4.8	5.0	6.4	6.7		
3.1	3.2	3.0	3.2	4.8	4.7	5.2	5.1	6.5	6.8		
3.2	3.3	3.2	3.4	4.9	4.8	5.3	5.3	6.6	7.0		
3.3	3.4	3.4	3.5	5.0	5.0	5.4	5.6	6.7	7.2		
3.4	3.4	3.5	3.6	5.1	5.1	5.5	5.7	6.8	7.5		
3.5	3.5	3.5	3.7	5.2	5.2	5.6	5.8	6.9	7.8		
3.6	3.6	3.6	3.7	5.3	5.4	5.7	6.0	7.0	8.0		
3.7	3.6	3.7	3.8	5.4	5.5	5.8	6.2				
3.8	3.7	3.8	3.9	5.5	5.6	5.8	6.4				

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EQUATING TABLE 13

ITBS LEVEL 11 TO CAT LEVEL 15
MATHEMATICS

GRADES 5, 6, AND 7

ITBS	CAT Gr. 5	CAT Gr. 6	CAT Gr. 7	ITBS	CAT Gr. 5	CAT Gr. 6	CAT Gr. 7	ITBS	CAT Gr. 5	CAT Gr. 6	CAT Gr. 7
2.6	2.1			4.6	4.6	4.6	4.7	6.6	6.9	7.2	7.6
2.7	2.2			4.7	4.7	4.8	4.8	6.7	7.0	7.3	7.8
2.8	2.3		1.7	4.8	4.8	4.9	4.9	6.8	7.2	7.4	8.0
2.9	2.5	2.1	2.0	4.9	5.0	5.0	5.0	6.9	7.4	7.6	8.2
3.0	2.6	2.2	2.3	5.0	5.2	5,2	5.2	7.0	7.4	7.8	8.3
3.1	2.8	2.3	2.5	5.1	5.2	5.3	5.4	7.1	7.5	7.9	8.5
3.2	3.0	2.4	2.7	5.2	5.3	5.4	5.6	7.2	7.6		8.6
3.3	3.2	2.5	2.9	5.3	5.4	5.5	5.7	7.3	7.6		8.8
3.4	3.3	2.9	3.2	5.4	5.5	5.6	5.9	7.4	7.6		9.0
3.5	3.5	3.0	3.4	5.5	5.6	5.9	6.0	7.5	8.0		
3.6	3.6	3.3	3.4	5.6	5.7	6.0	6.2	7.6	8.1		
3.7	3.6	3.4	3.5	5.7	5.8	6.2	6.2	7.7	8.2		
3.8	3.7	3.6	3.6	5.8	5.9	6.3	6.4	7.8	8.3		
3.9	3.8	3.7	3.7	5.9	6.0	6.4	6.4	7.9	8.4		
4.0	3.9	3.8	3.8	6.0	6.2	6.4	6.6	8.0	8.5		
4.1	4.0	3.9	4.0	6.1	6.4	6.6	6.7	8.1	8.6		
4.2	4.2	4.1	4.1	6.2	6.6	6.8	6.9	8.2	8.7		
4.3	4.3	4.3	4.4	6.3	6.6	6.9	7.2	8.3	8.9		
4.4	4.4	4.4	4.5	6.4	6.7	7.0	7.3				
4.5	4.5	4.5	4.6	6.5	6.8	7.2	7.5				

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EQUATING TABLE 14

ITBS LEVEL 12 TO CAT LEVEL 16
MATHEMATICS

GRADE 6

ITBS	CAT Gr. 6	CAT Gr. 7	ITBS	CAT Gr. 6	CAT Gr. 7	ITBS	CAT Gr. 6	CAT Gr. 7
3.2	2.1	2.8	5.4	5.5	5.9	7.5	8.1	8.1
3.3	2.3	3.1	5.5	5.6	6.0	7.6	8.2	8.1
3.4	2.5	3.3	5.6	5.6	6.1	7.7	8.2	8.3
3.5	2.7	3.5	5.7	5.7	6.2	7.8	8.3	8.5
3.6	2.9	3.7	5.8	6.0	6.3	7.9	8.4	8.9
3.7	3.3	3.8	5.9	6.1	6.4	8.0	8.5	9.3
3.8	3.5	3.8	6.0	6.2	6.5	8.1	8.6	9.7
3.9	3.6	4.0	6.1	6.3	6.6	8.2	8.6	10.0
4.0	3.6	4.1	6.2	6.4	6.7	8.3	8.8	
4.1	3.8	4.3	6.3	6.6	6.8	8.4	9.0	
4.2	4.0	4.4	6.4	6.7	7.0	8.5	9.2	
4.3	4.2	4.6	6.5	6.8	7.1	8.6	9.6	
4.4	4.3	4.7	6.6	6.9	7.2	8.7	9.9	
4.5	4.4	4.8	6.7	7.0	7.3	8.8	10.2	
4.6	4.6	4.9	6.8	7.2	7.5	8.9	10.4	
4.7	4.8	5.1	6.9	7.3	7.6	9.0	10.7	
4.8	4.9	5.2	7.0	7.5	7.6	9.1	10.9	
5.0	5.2	5.4	7.1	7.6	7.7	9.2	11.2	
5.1	5.2	5.5	7.2	7.7	8.0	9.3	11.4	
5.2	5.4	5.6	7.3	7.9	8.0	9.4	11.7	
5.3	5.4	5.7	7.4	8.0	8.0	9.5	12.0	

EQUATING TABLE 15

ITBS LEVEL 13 TO CAT LEVEL 17
MATHEMATICS

GRADE 7

ITBS	CAT	ITBS	CAT	ITBS	CAT
3.3	2.1	5.7	5.8	8.1	8.8
3.4	2.3	5.8	6.0	8.2	8.9
3.5	2.4	5.9	6.1	8.3	9.0
3.6	2.6	6.0	6.4	8.4	9.1
3.7	2.7	6.1	6.4	8.5	9.2
3.8	2.9	6.2	6.5	8.6	9.5
3.9	3.1	6.3	6.6	8.7	9.8
4.0	3.3	6.4	6.7	8.8	9.9
4.1	3.5	6.5	6.8	8.9	10.0
4.2	3.6	6.6	7.0	9.0	10.1
4.3	3.6	6.7	7.1	9.1	10.2
4.4	3.8	6.8	7.3	9.2	10.4
4.5	3.9	6.9	7.4	9.3	10.5
4.6	4.1	7.0	7.5	9.4	10.7
4.7	4.2	7.1	7.6	9.5	11.0
4.8	4.6	7.2	7.7	9.6	11.2
4.9	4.7	7.3	7.8	9.7	11.6
5.0	4.8	7.4	8.0	9.8	12.0
5.1	5.1	7.5	8.0	9.9	12.4
5.2	5.2	7.6	8.1	10.0	12.5
5.3	5.3	7.7	8.1	10.1	12.5
5.4	5.4	7.8	8.2	10.2	12.5
5.5	5.5	7.9	8.3	10.3	12.5
5.6	5.6	8.0	8.6	10.4	12.5

EQUATING TABLE 16

ITBS LEVEL 14 TO CAT LEVEL 18
MATHEMATICS

GRADE 8

ITBS	CAT	ITBS	CAT	ITBS	CAT
3.9	2.7	6.5	7.3	9.1	10.2
4.0	3.1	6.6	7.5	9.2	10.2
4.1	3.4	6.7	7.6	9.3	10.5
4.2	3.5	6.8	7.6	9.4	10.8
4.3	3.6	6.9	7.6	9.5	11.4
4.4	3.6	7.0	7.7	9.6	11.6
4.5	3.7	7.1	7.8	9.7	11.8
4.6	4.0	7.2	7.9	9.8	12.2
4.7	4.2	7.3	8.0	9.9	12.5
4.8	4.6	7.4	8.0	10.0	12.5
4.9	4.8	7.5	8.1	10.1	12.5
5.0	5.1	7.6	8.1	10.2	12.5
5.1	5.2	7.7	8.2	10.3	12.5
5.2	5.2	7.8	8.3	10.4	12.5
5.3	5.4	7.9	8.4	10.5	12.5
5.4	5.6	8.0	8.6	10.6	12.5
5.5	5.7	8.1	8.6	10.7	12.5
5.6	6.0	8.2	8.8	10.8	12.5
5.7	6.2	8.3	9.0	10.9	12.5
5.8	6.4	8.4	9.0	11.0	12.5
5.9	6.5	8.5	9.1	11.1	12.5
6.0	6.6	8.6	9.2	11.2	12.5
6.1	6.6	8.7	9.6	11.3	12.5
6.2	6.7	8.8	10.0	11.4	12.5
6.3	7.0	8.9	10.1	11.5	12.5
6.4	7.0	9.0	10.1		